WE CLAIM:

1. A method of writing product servo sectors to a disk of a disk drive, the disk drive comprising control circuitry and a head disk assembly (HDA) comprising the disk, an actuator arm, a head connected to a distal end of the actuator arm, and a voice coil motor for rotating the actuator arm about a pivot to position the head radially over the disk, the disk comprising a plurality of spiral tracks, wherein each spiral track comprises a high frequency signal interrupted at a predetermined interval by a sync mark, the method comprising the steps of:

(a) using the head internal to the disk drive to read the spiral tracks to generate a read signal;

(b) processing the read signal to detect a sync mark in a spiral track and generating an associated sync mark reliability metric, wherein the sync mark reliability metric representing a probability that the sync mark was detected accurately;

(c) generating a timing recovery measurement in response to the detected sync mark and the sync mark reliability metric;

(d) synchronizing a servo write clock in response to the timing recovery measurement;

(e) processing the read signal representing the high frequency signal in the spiral track to generate a position error signal (PES) used to maintain the head along a substantially circular target path; and

(f) using the servo write clock and the head internal to the disk drive to write the product servo sectors along the circular target path.

2. The method as recited in claim 1, wherein the step of generating the sync mark reliability metric comprises the steps of:

(a) processing the read signal to generate an estimated data sequence; and

(b) correlating the estimated data sequence with a sync mark pattern.

3. The method as recited in claim 1, wherein the step of generating the sync mark reliability metric comprises the steps of:

(a) rectifying the read signal; and

(b) generating a DC component of the rectified read signal.

4. The method as recited in claim 1, wherein the step of generating the sync mark reliability metric comprises the steps of:

(a) sampling the read signal to generate a sequence of read signal sample values;

(b) processing the read signal sample values to generate expected sample values; and

(c) generating a mean squared error (MSE) of the difference between the expected sample values and the read signal sample values.

5. The method as recited in claim 1, wherein the step of generating the sync mark reliability metric comprises the steps of:

(a) rectifying the read signal;

(b) integrating the rectified read signal; and

(c) generating the sync mark reliability metric and the PES from the integration.

6. The method as recited in claim 1, wherein the step of generating the timing recovery measurement comprises the steps of:

(a) comparing the sync mark reliability metric to a threshold;

(b) if the sync mark reliability metric is above the threshold, generating the timing recovery measurement in response to the detected sync mark; and

(c) if the sync mark reliability metric is below the threshold, ignoring the detected sync mark.

7. The method as recited in claim 6, wherein the step of generating the timing recovery measurement further comprises the steps of:

(a) accumulating the consecutive number of ignored sync marks; and

(b) if the accumulation exceeds a predetermined number and the sync mark reliability metric is below the threshold, generating the timing recovery measurement in response to the detected sync mark.

8. The method as recited in claim 1, wherein the control circuitry within the disk drive is used to read the spiral tracks in order to synchronize the servo write clock.

9. The method as recited in claim 1, wherein an external product servo writer is used to read the spiral tracks in order to synchronize the servo write clock.

10. A disk drive comprising:

(a) a disk comprising a plurality of spiral tracks, wherein each spiral track comprises a high frequency signal interrupted at a predetermined interval by a sync mark;

(b) an actuator arm;

(c) a head connected to a distal end of the actuator arm;

(d) a voice coil motor for rotating the actuator arm about a pivot to position the head radially over the disk; and

(e) control circuitry for writing a plurality of product servo sectors to the disk to define a plurality of radially spaced, concentric data tracks by:

using the head internal to the disk drive to read the spiral tracks to generate a read signal;

processing the read signal to detect a sync mark in a spiral track and generating an associated sync mark reliability metric, wherein the sync mark reliability metric representing a probability that the sync mark was detected accurately;

generating a timing recovery measurement in response to the detected sync mark and the sync mark reliability metric;

synchronizing a servo write clock in response to the timing recovery measurement;

processing the read signal to representing the high frequency signal in the spiral track to generate a position error signal used to maintain the head along a substantially circular target path; and

using the servo write clock and the head internal to the disk drive to write the product servo sectors along the circular target path.

11. The disk drive as recited in claim 10, wherein the control circuitry for detecting the sync mark by:

(a) processing the read signal to generate an estimated data sequence; and

(b) correlating the estimated data sequence with a sync mark pattern.

12. The disk drive as recited in claim 10, wherein the control circuitry for generating the sync mark reliability metric by:

(a) rectifying the read signal; and

(b) generating a DC component of the rectified read signal.

13. The disk drive as recited in claim 10, wherein the control circuitry for generating the sync mark reliability metric by:

(a) sampling the read signal to generate a sequence of read signal sample values;

(b) processing the read signal sample values to generate expected sample values; and

(c) generating a mean squared error (MSE) of the difference between the expected sample values and the read signal sample values.

14. The disk drive as recited in claim 10, wherein the control circuitry for generating the sync mark reliability metric by:

(a) rectifying the read signal;

(b) integrating the rectified read signal; and

(c) generating the sync mark reliability metric and the position error signal from the integration.

15. The disk drive as recited in claim 10, wherein the control circuitry for generating the timing recovery measurement by:

(a) comparing the sync mark reliability metric to a threshold;

(b) if the sync mark reliability metric is above the threshold, generating the timing recovery measurement in response to the detected sync mark; and

(c) if the sync mark reliability metric is below the threshold, ignoring the detected sync mark.

16. The disk drive as recited in claim 15, wherein the control circuitry for generating the timing recovery measurement by:

(a) accumulating the consecutive number of ignored sync marks; and

(b) if the accumulation exceeds a predetermined number and the sync mark reliability metric is below the threshold, generating the timing recovery measurement in response to the detected sync mark.